

CLAIMS

We claim:

1. An ambulatory patient monitoring apparatus comprising:
5 a portable housing comprising:
at least one physiological data input device operative to gather physiological data of a patient;
location determination circuitry;
communications circuitry capable of communicating through a cellular
10 network and a data network to a central health monitoring station;
signal processing circuitry for processing signals associated with any of said physiological data input device, said location determination circuitry and said communications circuitry; and
control circuitry.
2. Apparatus according to claim 1 wherein said at least one physiological data
input device is assembled within said housing.
3. Apparatus according to claim 1 wherein said at least one physiological data
15 input device is at least partially external to said housing.
4. Apparatus according to claim 3 wherein said external portion of said at least
one physiological data input device is connected to said housing via a connector.
- 25 5. Apparatus according to claim 1 wherein said at least one physiological data
input device communicate with said communications circuitry through wires.
6. Apparatus according to claim 1 wherein said at least one physiological data
input device communicate with said communications circuitry wirelessly.
- 30 7. Apparatus according to claim 6 wherein said wireless communication achieved
by a radio frequency transmitter.

8. Apparatus according to claim 6 wherein said wireless communication is achieved by an optical transmitter.

5 9. Apparatus according to claim 1 wherein said location determination circuitry comprises GPS circuitry.

10. Apparatus according to claim 1 wherein said control circuitry operates said physiological data input device continuously.

10 11. Apparatus according to claim 1 wherein said control circuitry operates said physiological data input device upon initiation by said patient.

15 12. Apparatus according to claim 1 wherein said control circuitry operates said physiological data input device upon initiation through said data network.

13. Apparatus according to claim 1 and additionally comprising voice communication circuitry.

20 14. Apparatus according to claim 1 wherein said control circuitry comprises a memory for storing any of said physiological data.

25 15. Apparatus according to claim 8 wherein said control circuitry is operative to simultaneously store a first portion of said physiological data in said memory in FIFO fashion and a second portion of said physiological data in said memory that is write-protected with respect to said first portion.

16. Apparatus according to claim 8 wherein said memory comprises preset parameters adapted for comparison with said physiological data.

30 17. Apparatus according to claim 10 wherein said control circuitry is operative to determine whether said physiological data are within said preset parameters.

18. Apparatus according to claim 11 wherein said control circuitry is operative to initiate contact with said central health monitoring station when said physiological data are determined to be outside of said preset parameters.

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19. Apparatus according to claim 8 wherein said memory comprises preprogrammed instructions for output to said patient via either of a display and a speaker.

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20. An apparatus for monitoring a patient, the apparatus comprising:

a portable housing for use by said patient, the portable housing comprising:

at least one physiological data input device operative to gather physiological data of said patient;

location determination circuitry;

communications circuitry for communicating through a data network and a cellular network to a central health monitoring station;

digital signal processing circuitry for processing signals associated with any of said physiological data input device, said location determination circuitry and said communications circuitry; and

control circuitry.

21. A method for monitoring a patient, the method comprising:

providing a portable housing for use by said patient, the portable housing comprising:

25 at least one physiological data input device operative to gather physiological data of said patient;

location determination circuitry;

communications circuitry for communicating information through a cellular network and data network to a central health monitoring station; and

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control circuitry;

gathering physiological data of said patient;

determining the geographic location of said patient; and

communicating said physiological data and said geographic location through a data network to said central health monitoring station.

22. A method according to claim 21 and further comprising:

analyzing said physiological data; and

providing a response based on said physiological data.

23. A method according to claim 21 wherein said gathering step is performed in response to activation by said patient.

24. A method according to claim 21 and further comprising activating an alarm prior to said activation by said patient.

25. A method according to claim 21 wherein said gathering step is performed independently from activation by said patient.

26. A method according to claim 21 wherein said gathering step comprises storing said physiological data in a memory.

27. A method according to claim 21 wherein said communicating step is performed in response to activation by said patient.

28. A method according to claim 27 wherein said communicating step is performed independently from activation by said patient upon said memory becoming full.

29. A method according to claim 28 and further comprising clearing a portion of said memory corresponding to said physiological data that has been communicated to said central health monitoring station.

30. A method according to claim 26 wherein said storing step comprises simultaneously storing a first portion of said physiological data in said memory in FIFO

fashion and a second portion of said physiological data in said memory that is write-protected with respect to said first portion.

31. A method according to claim 21 wherein said communicating step comprises
 5 establishing a communications link with said central health monitoring station in response to activation by said patient.

32. A method according to claim 21 wherein said communicating step comprises
 10 establishing a communications link with said central health monitoring station in response to an incoming communication from said central health monitoring station.

33. A method according to claim 21 wherein said communicating step
 comprises:

determining whether said physiological data are outside of preset parameters;

15 and

establishing a communications link with said central health monitoring
 station when said physiological data are determined to be outside of said preset
 parameters.

34. A method according to claim 22 wherein said providing a response step
 20 comprises voice-communicating an instruction to said patient.

35. A method according to claim 22 wherein said providing a response step
 comprises providing said patient's location to medical emergency personnel and
 25 dispatching said personnel to said patient's location.

36. An ambulatory patient monitoring apparatus comprising:
 a housing comprising:

physiological data input means gathering physiological data of a patient;

30 location determination means for determining a patient location;

communications means for communicating through a cellular network

and a data network to a central health monitoring station; and

control means for controlling the monitoring apparatus.

37. An ambulatory patient monitoring apparatus comprising:
a housing comprising:

5 at least one physiological data input device operative to gather
physiological data of a patient;
location determination circuitry;
communications circuitry capable of communicating through a cellular
network and a data network to a central health monitoring station;
10 signal processing circuitry for processing signals associated with any of
said physiological data input device, said location determination circuitry and said
communications circuitry; and
control circuitry operative to initiate physiological data gathering upon
receiving a signal through said data network.

- 15 38. A patient monitoring apparatus comprising:
a portable housing comprising:

a physiological data input device capable of gathering physiological data
of a patient;
20 location determination circuitry;
communications circuitry capable of communicating through a cellular
network and a data network to a central station;
control circuitry; and
audio communication circuitry.

- 25 39. A method for monitoring a patient, the method comprising:
providing a housing for use by said patient, the housing comprising:
a physiological data input device operative to gather physiological data
of said patient;
30 location determination circuitry;

communications circuitry for communicating information through a cellular network and data network to a central health monitoring station and for communicating voice data; and

control circuitry;

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gathering physiological data of said patient;

determining the geographic location of said patient; and

communicating said physiological data through a data network to said central health monitoring station.

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40. A method for monitoring a patient, the method comprising:

providing a portable housing for use by said patient, the portable housing comprising:

at least one physiological data input device operative to gather physiological data of said patient;

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location determination circuitry;

communications circuitry for communicating information through a cellular network and data network to a central health monitoring station; and

control circuitry;

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in response to a signal received from the data network, gathering physiological data of said patient;

communicating said physiological data through the data network to said central health monitoring station.